APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/622,656	07/18/2003	Jun Tung Fong	YOR920030103US1	3841

7590 12/14/2005	EXAMINER
Ryan, Mason & Lewis, LLP	SHERMAN, STEPHEN G

ART UNIT	PAPER NUMBER
2674	

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DATE MAILED: 12/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
	10/622,656	FONG ET AL.
Office Action Summary	Examiner	Art Unit	
	Stephen G. Sherman	2674	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _18 July 2003_.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-37_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-37_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _21 August 2003_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _8/6/03_

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter which the applicant regards as his invention.

2.   Claims 12-14 recite the limitation "the virtual keystroke detection system." There

is insufficient antecedent basis for this limitation in the claim.

3.   Claims 21-23 recite the limitation "the keystroke detection system." There is

insufficient antecedent basis for this limitation in the claim.

4.   Claim 28 recites the limitation "the pervasive computing device." There is

insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

5.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by
> another filed in the United States before the invention by the applicant for patent or (2) a patent

granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6.   Claims 17-20 and 34-37 are rejected under 35 U.S.C. 102(e) as being anticipated by Liu et al. (US 2004/0125147).

Regarding claim 17, Liu et al. disclose a method of providing a user interface for a computing device (Figure 1, item 301 and paragraph [0019]), comprising the steps of:

projecting a user input display from a projector of a computing device onto a surface (Figure 1, item 301 and paragraphs [0014-0015]); and

projecting a user output display from the projector of the computing device onto the surface (Figure 1, item 102 and paragraphs [0014-0015]),

wherein the user input display and the user output display are projected from a single projector onto the surface (Paragraph [0015] reveals that the display and keyboard image are generated by a single projector, laser emitter 201 shown in Figure 2.).

Regarding claim 18, Liu et al. disclose the method of claim 17. Liu et al. also disclose wherein the computing device is a pervasive computing device (Paragraph [0021]. The examiner interprets that since it is stated that the device does not occupy space that the device would be a pervasive device.).

Regarding claim 19, Liu et al. disclose the method of claim 17. Liu et al. does not

explicitly teach of the method wherein the projector is a micro projector. However, from

paragraph [0021] the examiner understands that the device is very small, since it is said

to not occupy space, such that the projecting laser emitter 201 would be a micro laser

emitter.

Regarding claim 20, Liu et al. disclose the method of claim 17. Liu et al. also

disclose wherein the steps of projecting the user input display and user output display

comprise

projecting the user input display between the user and the computing device

(Figure 1, item 301 is the user input display which is projected between the device 101

and where a user would be to operated the keyboard.) and

projecting the user output display between the user input display and the

computing device (Figure 1, item 102 is between the user input display 301 and the

device 101.).

Regarding claim 34, Liu et al. disclose a computing device (Figure 1, item 101),

comprising:

a projector that projects an image from the computing device to a surface (Figure

2, item 201 and paragraph [0015]. The examiner interprets that the laser emitter is a

projector since it projects and image.),

wherein the image comprises a user input display and a user output display
(Figure 1, items 102 and 301).

Regarding claim 35, Liu et al. disclose the computing device of claim 34. Liu et
al. also disclose wherein the computing device is a pervasive computing device
(Paragraph [0021]. The examiner interprets that since it is stated that the device does
not occupy space that the device would be a pervasive device.).

Regarding claim 36, Liu et al. disclose the computing device of claim 34. Liu et
al. does not explicitly teach of the method wherein the projector is a micro projector.
However, from paragraph [0021] the examiner understands that the device is very
small, since it is said to not occupy space, such that the projecting laser emitter 201
would be a micro laser emitter.

Regarding claim 37, Liu et al. disclose the computing device of claim 34. Liu et
al. also disclose wherein the user input display is disposed between a user and the
computing device (Figure 1, user input 301 is located between the device 101 and
where a user would be to operate the keyboard.), and the user output display is
disposed between the user input display and the computing device (Figure 1, user
output 102 is located between device 101 and the user input 301.).

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2.   The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1.   Determining the scope and contents of the prior art.
2.   Ascertaining the differences between the prior art and the claims at issue.
3.   Resolving the level of ordinary skill in the pertinent art.
4.   Considering objective evidence present in the application indicating obviousness or nonobviousness.

3.   Claims 1-3 and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Liu et al. (US 2004/0125147) in view of MacDonald (US 6,937,210).

        Regarding claim 1, Liu et al. disclose a method of providing a user interface for a

computing device (Figure 1, item 301 and paragraph [0019]), comprising the steps of:

        projecting a user input display from a projector of the computing device onto a

surface (Figure 1, item 301 and paragraphs [0014-0015]); and

projecting a user output display from the projector of the computing device onto a

surface (Figure 1, item 102 and paragraphs [0014-0015]).

Liu et al. fail to teach of a method for providing a user interface for a computing

device wherein the surfaces for the user input and output display and are disposed in

different planes.

MacDonald teaches of a method for providing two projected displays on surfaces

disposed in different planes (Figure 3, projector 3 projects an image on one surface of

item 1 and projector 39 projects an image on another surface of item 1, which is

disposed in a different plane.).

Therefore it would have been obvious to "one of ordinary skill" in the art at the

time the invention was made to use the idea of projecting images on different surfaces

as taught by MacDonald with the computing device taught by Liu et al. in order to

provide for an improved system for viewing images of an object.

Regarding claim 2, Liu et al. and MacDonald disclose the method of claim 1. Liu

et al. also disclose wherein the computing device is a pervasive computing device

(Paragraph [0021]. The examiner interprets that since it is stated that the device does

not occupy space that the device would be a pervasive device.).

Regarding claim 3, Liu et al. and MacDonald disclose the method of claim 1. Liu

et al. also disclose wherein the user input display and the user output display are

originally projected as a single image from a single projector (Paragraph [0015] reveals

that the display and keyboard image are generated by a single projector, laser emitter 201 shown in Figure 2. The examiner interprets that since only the laser emitter 201 generates the image that the keyboard and display would be generated as a single image.).

Regarding claim 9, Liu et al. and MacDonald disclose the method of in claim 1.

Liu et al. and MacDonald fail to teach of a method wherein the first surface is in a plane disposed in front of the computing device, the second surface is in a plane disposed behind the computing device, and the second surface is orthogonal to the first surface.

However, it would have been obvious to project the surface for the output display behind the computing device and orthogonal to the first surface since it was well known in the art at the time the invention was made that this was how a conventional computer is set up: the display surface being located orthogonal to the user input.

Regarding claim 10, Liu et al. and MacDonald disclose the method of claim 1. Liu et al. also disclose wherein the user input display comprises an image of a keyboard (Figure 1, item 301).

Regarding claim 11, Liu et al. and MacDonald disclose the method of claim 1.

Liu et al. and MacDonald fail to teach of a method wherein the first surface is a horizontal surface and the second surface is a vertical surface.

However, it would have been obvious to make the first surface horizontal and the

second surface vertical since it was well known in the art at the time the invention was

made that this was how a conventional computer is set up: the display surface being

located vertical and the user input being located horizontal.

4.   Claims 4-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu

et al. (US 2004/0125147) in view of MacDonald (US 6,937,210) and further in view of

Anderson (US 4,575,722).

Regarding claim 4, Liu et al. and MacDonald disclose the method of claim 3.

Liu et al. and MacDonald fail to teach of a method further comprising the step of

reflecting a portion of the originally projected single image with a mirror system in the

computing device, which causes the splitting of the originally projected single image into

the user input display and the user output display.

Anderson discloses of a method comprising the step of reflecting a portion of an

originally projected single image with a mirror system, which causes the splitting of the

originally projected single image into two different displays (Figure 1, item 18 and

column 4, lines 38-48).

Therefore it would have been obvious to "one of ordinary skill" in the art at the

time the invention was made to use mirror system taught by Anderson with the dual

image system taught by the combination of Liu et al. and MacDonald in order to

simultaneously view both images on different surfaces.

Regarding claim 5, Liu et al., MacDonald and Anderson disclose the method of

claim 4. Anderson also discloses wherein, in the step of reflecting a portion of the

originally projected single image, there is a reflected portion and an unreflected portion

of the image (Figure 1 and column 4, lines 38-48, where 40' is the reflected portion and

40" is the unreflected portion.).

Regarding claim 6, Liu et al., MacDonald and Anderson disclose the method of

claim 4. Anderson also discloses wherein the step of reflecting a portion of the

originally projected single image further comprises:

splitting a display with a first mirror of the mirror system (Figure 1, item 42 and

column 4, lines 38-48);

receiving a reflection of the display from the first mirror at a second mirror of the

mirror system (Figure 1, item 44 and column 4, lines 38-48); and

projecting the display from the second mirror to a second surface (Figure 1, item

20 and column 4, lines 38-48).

Regarding claim 7, Liu et al., MacDonald and Anderson disclose the method of

claim 4. Liu et al. also disclose wherein the step of projecting the user output display

comprises projecting a large image when a short distance exists between the device

and the surface (Figure 1, item 101 can be seen to project a large image of the output

display 102 in a relatively short distance between the device 101 and the surface.).

Regarding claim 8, Liu et al., MacDonald and Anderson disclose the method of

claim 1. Liu et al. does not explicitly teach of the method wherein the projector is a

micro projector. However, from paragraph [0021] the examiner understands that the

device is very small since it is said to not occupy space, such that the projecting laser

emitter 201 would be a micro laser emitter.

5.   Claims 12-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Liu et al. (US 2004/0125147) in view of MacDonald (US 6,937,210) and further in view

of Rafii et al. (US 6,414,422).

Regarding claim 12, Liu et al. and MacDonald disclose the method of claim 1.

Liu et al. and MacDonald fail to teach of a method further comprising the step of

providing audio feedback from the computing device in response to intercepting sensors

of the virtual keystroke detection system, over a virtual key in the user input display.

Rafii et al. disclose of a method further comprising the step of providing audio

feedback from a computing device in response to intercepting sensors of a virtual

keystroke detection system, over a virtual key in a user input display (Column 6, lines

42-58).

Therefore it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to use the audio feedback method taught by Rafii et al. with the computing device taught by the combination of Liu et al. and MacDonald in order to provide feedback to the user that a key was pressed.

Regarding claim 13, Liu et al. and MacDonald disclose the method of claim 1.

Liu et al. and MacDonald fail to teach of a method further comprising the step of providing visual feedback on the user output display in response to intercepting sensors of the virtual keystroke detection system, over a virtual key of the user input display.

Rafii et al. disclose of a method further comprising the step of providing visual feedback on a user output display in response to intercepting sensors of a virtual keystroke detection system, over a virtual key of a user input display (Column 4, lines 34-50).

Therefore it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to use the visual feedback method taught by Rafii et al. with the computing device taught by the combination of Liu et al. and MacDonald in order to provide feedback to the user that a key was pressed.

Regarding claim 14, Liu et al. and MacDonald disclose the method of claim 1.

Liu et al. and MacDonald fail to teach of a method further comprising the step of providing visual feedback on the user input display in response to intercepting sensors of the virtual keystroke detection system, over a virtual key of the user input display.

Rafii et al. disclose of a method further comprising the step of providing visual feedback on a user input display in response to intercepting sensors of a virtual keystroke detection system, over a virtual key of a user input display.

Therefore it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to use the visual feedback method taught by Rafii et al. with the computing device taught by the combination of Liu et al. and MacDonald in order to provide feedback to the user that a key was pressed.

Regarding claim 15, Liu et al. and MacDonald disclose the method of claim 1.

Liu et al. and MacDonald fail to teach of a method wherein the user input display comprises an image of a scratch pad.

Rafii et al. disclose of a method wherein the user input display comprises an image of a scratch pad (Column 6, lines 33-41. The examiner interprets that the scratch pad would be enabled when the control and shift keys are pressed.).

Therefore it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to use the scratch pad taught by Rafii et al. with the computing device taught by the combination of Liu et al. and MacDonald in order to allow for the user to draw a line, a signature, or other graphic.

Regarding claim 16, Liu et al. and MacDonald disclose the method of claim 1.

Liu et al. and MacDonald fail to teach wherein the user input display comprises an image of a pointing device.

Rafii et al. disclose of a method wherein the user input display comprises an image of a pointing device (Column 6, lines 33-41. The examiner interprets that the pointing device would be enabled when the control and shift keys are pressed.).

Therefore it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to use the pointing device taught by Rafii et al. with the computing device taught by the combination of Liu et al. and MacDonald in order to allow for the user to move a cursor around to draw a line, a signature, or other graphic.

6.   Claims 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al. (US 2004/0125147) in view of Rafii et al. (US 6,414,422).

Regarding claim 21, refer to the discussion of claim 12.

Regarding claim 22, refer to the discussion of claim 13.

Regarding claim 23, refer to the discussion of claim 14.

7.   Claims 24-29 and 31-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al. (US 2004/0125147) in view of Anderson (US 4,575,722).

Regarding claim 24, Liu et al. disclose a computing device, comprising:

a projector that projects an image (Figure 2, item 101 contains laser emitter 201.); and

wherein a projected image provides a virtual user interface for a computing device (Figure 1, items 101, 102, and 301).

Liu et al. fail to teach of a computing device comprising: a mirror system disposed in accordance with the projector, wherein the mirror system reflects a portion of the image from the projector, projecting a nonreflected portion of the image to a first surface and a reflected portion of the image to a second surface.

Anderson discloses of a device comprising:

a mirror system (Figure 1, item 18 and column 3, lines 28-39),

wherein the mirror system reflects a portion of an image from a projector (Figure 1, item 40' and column 4, lines 38-48), projecting a nonreflected portion of the image to a first surface (Figure 1, items 40" and 20, and column 4, lines 38-48) and a reflected portion of the image to a second surface (Figure 1, items 40' and 20, and column 4, lines 38-48).

Therefore it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to use mirror system taught by Anderson with the computing device taught by Liu et al. in order to simultaneously view both images on different surfaces.

Regarding claim 25, Liu et al. and Anderson disclose the computing device of claim 24. Liu et al. also disclose wherein the computing device is a pervasive computing device (Paragraph [0021]. The examiner interprets that since it is stated that the device does not occupy space that the device would be a pervasive device.).

Regarding claim 26, Liu et al. and Anderson disclose the computing device of claim 24. Anderson also discloses wherein the mirror system comprises:

a first mirror that intercepts a portion of the image from the projector (Figure 1, item 42 and column 4, lines 38-48); and

a second mirror that receives the reflected portion of the image from the first mirror and projects the reflected portion of the image to the second surface (Figure 1, item 44 and column 4, lines 38-48).

Regarding claim 27, Liu et al. and Anderson disclose the computing device of claim 24. Liu et al. does not explicitly teach of the method wherein the projector is a micro projector. However, from paragraph [0021] the examiner understands that the device is very small since it is said to not occupy space, such that the projecting laser emitter 201 would be a micro laser emitter.

Regarding claim 28, Liu et al. and Anderson disclose the computing device of claim 24. Liu et al. also discloses wherein a portion of the image is projected in front of the pervasive computing device between the computing device and the user (Figure 1,

item 301 is located between device 101 and where the user would be located to operate the keyboard.).

Regarding claim 29, Liu et al. and Anderson disclose the computing device of claim 24. Liu et al. and Anderson fail to explicitly teach wherein the reflected portion of the image is projected behind the computing device. However, Liu et al. never says in which direction the virtual keyboard and display are projected from the device, and the area in which the keyboard and display are projected could very well be "behind" the device where in combination with the mirror system taught by Anderson would project the reflected portion behind the device.

Regarding claim 31, Liu et al. and Anderson disclose the computing device of claim 24. Liu et al. also disclose wherein a portion of the projected image comprises a virtual keyboard image (Figure 1, item 301).

Regarding claim 32, Liu et al. and Anderson disclose the computing device of claim 24. Liu et al. also disclose wherein a portion of the projected image comprises a user output display (Figure 1, item 102).

8.   Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al.

(US 2004/0125147) in view of Anderson (US 4,575,722) and further in view of

MacDonald (US 6,937210).

Liu et al. and Anderson disclose the computing device of claim 24.

Liu et al. and Anderson fail to teach of the computing device wherein the first

surface is perpendicular to the second surface.

MacDonald discloses of a device wherein a first surface is perpendicular to a

second surface (Figure 3, item 3 projects an image that is perpendicular to the image

projected by item 39.).

Therefore it would have been obvious to "one of ordinary skill" in the art at the

time the invention was made to provide the first and second surfaces perpendicular to

each other as taught by MacDonald in the computing device taught by the combination

of Liu et al. and Anderson in order to provide the keyboard and display image portions

in a fashion similar to that of a standard computer as is well known in the art.

9.   Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al.

(US 2004/0125147) in view of Anderson (US 4,575,722) and further in view of Rafii et

al. (US 6,614,422).

Liu et al. and Anderson disclose the computing device of claim 24.

Liu et al. and Anderson fail to teach of the computing device further comprising a

key feedback mechanism.

Rafii et al. disclose a virtual keyboard comprising a key feedback mechanism (Column 6, 42-58. The examiner interprets that if the device can provide feedback to the user that it would contain a feedback mechanism.).

Therefore it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to use the key feedback mechanism taught by Rafii et al. with the computing device taught by the combination of Liu et al. and Anderson in order to provide feedback to the user that a key was pressed.
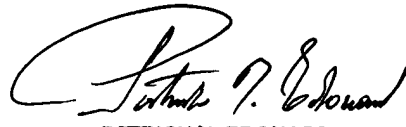
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen G. Sherman whose telephone number is (571) 272-2941. The examiner can normally be reached on M-F, 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard can be reached on (571) 272-7603. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

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you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

SS

PATRICK N. EDOUARD
SUPERVISORY PATENT EXAMINER

30 November 2005